

Appl. No. 10/757,893
Amdt. dated March 30, 2006
Reply to Office action of December 30, 2005

REMARKS

Reconsideration of this application is respectfully requested.

Claims 17-31 were withdrawn from consideration by the Examiner. Independent method claims 17 and 26 are amended to depend on respective product claims 1 and 12. Claims 17-31 are now in condition for rejoinder upon allowance of claims 1 and 12.

Claims 1-16 were rejected under 35 U.S.C. § 103 as being unpatentable over Matthews et al. (U.S. 6,148,867) in view of Noonan et al. (US 5,783,268). The rejection is respectfully traversed, for at least the following reasons:

an exterior facing adhered to the exterior surface; and
a bonded, non-woven glass mat facing adhered to the interior surface, the mat having a plurality of parallel or substantially parallel fibers oriented in a longitudinal direction of the duct board material.

The Action admits that Matthews et al. do not disclose or suggest a mat which has a plurality of parallel fibers oriented in a longitudinal direction of the duct board material. Nevertheless, the Action alleges that Noonan et al. discloses this feature. The Action alleges that Noonan discloses, "a plurality of parallel fibers oriented in a longitudinal direction of a duct board material (the longitudinal direction is machine direction; the fibers are therefore, parallel, and the facing therefore comprises parallel yarns embedded in the facing . . . "

Noonan mentions the machine direction in two contexts:

(1) Noonan mentions that his mat 11 has a tensile strength in the machine direction (col. 3, lines 46-50, and claims 10, 32 and 41), but does not disclose or suggest that the mat 11 has parallel fibers oriented in the machine (or longitudinal) direction. The allegation that the reference to a machine direction tensile strength indicates parallel fibers oriented in that direction is unfounded, and this is neither expressly or inherently disclosed by Noonan et al. Tensile strength is a measurement based on a load that can be applied in a given direction, regardless of whether any fibers are oriented in that direction. A mat with randomly oriented fibers would still have a tensile strength in the machine direction, but that does not mean that such a mat has parallel fibers oriented in the machine direction.

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(2) Although Noonan's FSK layer 12, 13, 14 has tri-directional fiber glass yarn reinforcing scrim 13 with a four per inch measure in both the machine and cross direction (col. 3, lines 45-57), the FSK is not a non-woven glass mat, as required by amended claim 1. The FSK includes a Kraft paper layer adjacent to the duct board.

Thus, Noonan fails to disclose or suggest "a bonded, non-woven glass mat facing adhered to the interior surface, the mat having a plurality of parallel or substantially parallel fibers oriented in a longitudinal direction", as required by claim 1, and the combined teachings of Matthews et al. and Noonan et al. likewise fails to disclose or suggest these features.

Therefore, claim 1 and its dependent claims 2-10 should be allowable over the prior art of record. Additionally, the dependent claims recited features that separately distinguish the claims from the prior art of record.

Claims 2, 3 and 4 require that "the mat facing comprises a plurality of parallel or substantially parallel yarns." The Action alleges that Noonan et al. discloses these yarns. As noted above, Noonan only mentions yarns within the scrim layer 13 of the FSK facing. There is no suggestion in Noonan et al. of parallel or substantially parallel yarns in a non-woven glass mat. Therefore, claims 2, 3 and 4 should be allowable.

With respect to claim 3, the Action further alleges that Noonan teaches machine direction yarns embedded in the facing for increased laminar flow. However, the passage in Noonan regarding laminar flow states, "an improved insulated air duct with a smooth interior surface mat which results in increased laminar flow adjacent to the duct board" Noonan neither discloses nor suggests parallel yarns embedded in the mat (i.e., air flow surface) as alleged by the Action. To the extent that Noonan teaches the desirability of increased laminar flow, Noonan teaches that this is accomplished by making a smooth interior surface. One of ordinary skill in the art who was familiar with Noonan's teachings would have been directed by Noonan to make the interior surface smooth, and would not have been motivated to make the surface less smooth by embedding yarns in the mat as required by Applicants' claim 3. Thus, Noonan's teaching of the desirability of a smooth surface teaches away from claim 3, and the rejection of claim 3 should be withdrawn.

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Regarding claim 4, the Action alleges that because Noonan is totally silent regarding slack, that Noonan et al. teaches the absence of slack. The Action employs incorrect logic, arguing, "Noonan et al do not teach a facing which comprises slack; Noonan et al therefore teach yarns embedded in the facing without slack. This is incorrect. Silence regarding a feature is not evidence of the absence of that feature. Noonan does not teach that his glass mat comprises yarns at all — only Noonan's FSK comprises yarn — much less suggest a requirement for yarns without slack embedded in the glass mat facing. Therefore, the rejection of claim 4 is improper.

Claim 6 requires "a ratio of machine direction tensile strength to cross direction tensile strength of at least 2:1". The Action alleges that Noonan discloses this ratio, based on a 7 lb/in. machine direction strength and a 5 lb/in cross direction strength. The ratio 7/5 is equal to 1.40, and the ratio of 2/1 is 2.0. It is improper for the Patent and Trademark Office to allege that 1.40 is at least 2.0. The rejection of claim 6 is untenable, and must be withdrawn.

Claim 11 includes similar features to those discussed above with reference to claim 1, requiring that the mat have parallel fibers oriented in the longitudinal direction. Therefore claim 11 should be allowable.

Amended claim 12 requires, "a plurality of parallel or substantially parallel fibers oriented in a longitudinal direction of the duct board material and adhered directly to the interior surface."

The combined teachings of Matthews et al. and Noonan et al. neither disclose nor suggest this feature. Matthews et al. fails to disclose or suggest parallel longitudinal fibers. The only longitudinal fibers mentioned by Noonan et al. are the scrim fibers, which are not adhered directly to the interior surface. Noonan et al. teach that a Kraft layer is adhered to the interior surface, which separates the scrim from the duct board. Therefore, claim 12 should be allowable over the prior art of record.

New claim 32 requires that "the material is formed into a rectangular duct with the mat facing on an interior side thereof and the exterior facing on an exterior side thereof." Support is

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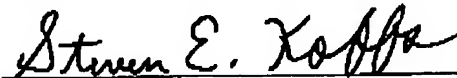
provided by paragraph [0034]. The combined teachings of Matthews and Noonan neither disclose nor suggest these features in combination with the features of the base claim 1. Matthews fails to disclose or suggest longitudinal (or machine direction) fibers, and Noonan only mentions an exterior FSK facing having fiber glass yarn reinforcing scrim 13 with a four per inch measure in both the machine and cross direction. There is no suggestion in the combined teachings of these two references to provide a bonded, non-woven glass mat facing adhered to the interior surface of a duct, the mat having a plurality of parallel or substantially parallel fibers oriented in a longitudinal direction of the duct board material.

In view of the foregoing amendments and remarks, Applicant submits that this application is in condition for allowance. Early notification to that effect is respectfully requested.

The Assistant Commissioner for Patents is hereby authorized to charge any additional fees or credit any excess payment that may be associated with this communication to deposit account 04-1679.

Respectfully submitted,

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